
DEPARTMENT OF THE INTERIOR**Fish and Wildlife Service****50 CFR Part 17****Endangered and Threatened Wildlife and Plants; Proposed Threatened Status for *Phyllitis scolopendrium* var. *Americana* (American Hart's-Tongue Fern)**

AGENCY: Fish and Wildlife Service, Interior.

ACTION: Proposed rule.

SUMMARY: The Service proposes to determine threatened status for the American hart's-tongue fern. This rare fern is known from only two sites in Alabama, one in Tennessee, four in Michigan, nine in New York, and from a limited areas in southern Ontario, Canada. It is threatened throughout most of its range by trampling, habitat alteration, or destruction by lumbering, residential development, and quarrying. This proposal, if made final, would extend the protection of the Endangered Species Act of 1973 (Act), as amended, to American hart's-tongue fern. The Service seeks data and comments from the public.

DATE: Comments from all interested parties must be received by November 14, 1988. Public hearing requests must be received by October 27, 1988.

ADDRESSES: Comments, and materials, and requests for public hearing concerning this proposal should be sent to the Field Supervisor, Asheville Field Office, U.S. Fish and Wildlife Service, 100 Otis Street, Room 224, Asheville, North Carolina 28801. Comments and materials received will be available for public inspection, by appointment, during normal business hours at the above address.

FOR FURTHER INFORMATION CONTACT:
Mr. Robert R. Currie at the above
address (704/259-0321 or FTS 672-0321).
SUPPLEMENTARY INFORMATION:

Background

Phyllitis scolopendrium (L.) Newman variety *americana* Fernald (American hart's-tongue fern) has evergreen, strap-shaped fronds that are 5 to 17 inches long (12 to 42 cm), $\frac{3}{4}$ to $1\frac{1}{4}$ inches wide (2 to 4.5 cm) and are auriculate (lobed) at their base. The green petiole portion of the frond is 1 to 5 inches long (3 to 12 cm) and has cinnamon-colored scales on its surface. The sori (groups of spore-producing reproductive structures called sporangia) are linear in shape and occur on the underside of the blade portion of the frond. The fronds arise in a cluster from a short, creeping rhizome which is covered with cinnamon-colored scales (Evans 1981, Lellinger 1985). Ferns recognized as belonging to the species *Phyllitis scolopendrium* [earlier referred to as *Scolopendrium vulgare*] were first discovered in the United States in 1807 when Pursh found the species growing in central New York (Maxon 1900).

Phyllitis scolopendrium was described by Linneus in 1753 and is common in the British Isles and is rare to frequent in Europe (Love 1954, Small 1938). In 1849, Gattinger discovered the species in Roane County, Tennessee (Maxon 1900), and in 1857, Hincks found it in Grey County, Ontario, Canada (Soper 1954). Fernald described the taxon *Phyllitis scolopendrium* var. *americana* in 1935. He distinguished it from the European variety on the basis of several distinct morphological features. These features include smaller fronds, fewer and shorter indusia (coverings over the sori), the presence of elongate tips on the frond's veinlets, and the distance of the veinlets from the edge of the frond (Fernald 1935).

Britton (1953) determined that, in addition to the morphological characters described by Fernald, the North American representatives of *Phyllitis scolopendrium* differed from the European plants cytologically in having 144 rather than 72 chromosomes. Lellinger (1985) also notes that *Phyllitis scolopendrium* var. *scolopendrium* is much more easily cultivated than is *Phyllitis scolopendrium* var. *americana*. Love and Love (1973) included the American hart's-tongue fern within their concept of *Phyllitis japonica* Kom. and designated it as *americana* (Fern.) Love and Love. Some authors (e.g., Kartesz and Kartesz [1980]) include the genus *Phyllitis* within *Asplenium*. Neither of these treatments have been widely accepted in the United States.

Lillinger's 1985 treatment which maintains the genus *Phyllitis* and includes American hart's-tongue fern in the European rather than the Japanese species is followed here.

Two additional States were added to the known range of the species: In 1953, Hall and Hegenah discovered ferns, which were then recognized as the distinct taxon *Phyllitis scolopendrium* var. *americana*, growing in Chippewa County, Michigan (Hegenah 1953). In 1979, Osterlund, Batchelder, and Short discovered them in Jackson County, Alabama (Batchelder 1979, Short 1979).

In North America *Phyllitis scolopendrium* var. *americana* is usually found growing on or at least in close association with dolomitic limestone (limestone high in magnesium). This extremely rare fern is currently known from only seven counties in the Canadian Province of Ontario, two counties in New York, one county in Michigan, two counties in Alabama, and one county in Tennessee. In the northern part of its range it usually occurs on or adjacent to limestone outcrops. The southern populations are only found within limestone pits that trap cold air, have high humidity, and are well shaded. At all known locations, American hart's-tongue fern appears to require high humidity, shaded conditions, a moist substrate, and the presence of dolomitic limestone.

In the 181 years that have elapsed since first being discovered in North America, American hart's-tongue fern has remained an extremely rare taxon that is found in small, widely disjunct groups of populations. Concern for the continued existence of this species has long been voiced by those interested in the preservation of the flora of the United States. This concern is demonstrated by early articles such as Benedict's 1925 "Saving the Hart's Tongue," House's 1934 "Saving the Scolopendrium Fern," and Faust's 1960 "Survival of Hart's-tongue Fern in Central New York." *Phyllitis scolopendrium* var. *americana* remains vulnerable to extinction throughout most of its range. A description of the status of the species in each North American State or province in which it occurs is provided below:

Alabama. There are two known populations of American hart's-tongue fern in Alabama. Both populations were discovered by cavers associated with the Huntsville Grotto of the National Speleological Society (Batchelder 1979, Evans 1982). One population occurs in a Jackson County sinkhole that is on lands managed as a National Wildlife Refuge by the Service. Short (1979) observed 20

plants present when he first visited the site. Evans (1981) found that the population had dwindled to nine plants by July 1981. Evans further states that this population appears, for undetermined reasons, to be in static or declining condition. The other population is in the privately owned pit entrance to a limestone cave. This Morgan County population is located about 25 miles (40 km) southwest of the Jackson County population (Short 1980). Evans (1981) reports that this is a vigorous, healthy, reproducing population, which in 1981 supported 97 plants (26 fertile adults, 13 subadults, and 58 juveniles).

Tennessee. Tennessee has two records of American hart's-tongue fern. The first of these was discovered in the entrance to a Roane County cave by Gattinger in 1849. Despite repeated searches for the plant at this site since the early 1900s, it has not been seen again and is considered to be extirpated from the area (Maxon 1900, Shaver 1954, Evans 1981). The only extant Tennessee population was discovered by Cheatham in 1879 (Williamson 1879, Evans 1981). Originally supporting about 200 plants, this population has contained only about 17 plants in the recent past (Evans 1981). Early concern about the decline of this population led Graves in 1929 to scatter American hart's-tongue fern spores at the site. The spores were obtained from a plant collected in Ontario, Canada (McGilliard 1936). There appears to be no method of distinguishing Tennessee from Canadian representatives of this taxon; therefore, it is impossible to know the origin of the few plants that survive there. From 1982 to the present time the site has been leased by The Nature Conservancy for the express purpose of protecting this species.

Michigan. The Michigan Natural Features Inventory recognizes four extant populations of American hart's-tongue fern (Sue Crispin, Michigan Natural Features Inventory, personal communication, 1986). All of these sites are in Mackinac County. One additional site in Chippewa County has not supported the plant since 1983, and it is believed that the species is extirpated from the county. Of the four remaining populations, two are owned by the Michigan Nature Association. Both of the association's populations are healthy and support several hundred plants each. One population of approximately 25 plants is on land managed by the U.S. Forest Service (Hiawatha National Forest). This population supported 64 plants in 1981, and, in an effort to protect the remaining

individuals, the Forest Service has rerouted a trail which traverses the area. The last population is on privately owned, unprotected land in fairly close proximity to the two populations owned by the Michigan Nature Association (Sue Crispin, personal communication, 1986; Nepstad 1981; Futyma 1980; Hegenah 1953 and 1956).

New York. The plight of *Phyllitis scolopendrium* var. *americana* in New York has been carefully documented since the early 1900s (Hunter 1922; Faust 1960; Cinquemani *et al.*, in press). The delineation of individual populations provided here is that used by the New York Natural Heritage Program (Clemants *in litt.*). Their identification of populations is based primarily upon Faust (1960) and Hunter (1922).

The fern is known from a limited area within Madison and Onondaga Counties. Thirteen populations are currently recognized by the program; three of these are in Madison County and 10 are or were in Onondaga County.

Four of the 10 Onondaga County populations are believed to be extirpated. Three of these were destroyed by quarrying operations between 1924 and 1935 and one by undetermined means soon after 1959. Four populations are small and vulnerable containing 1, 9, 50, and 167 individuals, respectively. The remaining two populations are the largest in New York and indeed are the largest populations in the United States. These two populations are located in a State park, and in 1986 they contained a combined total of approximately 2,800 individuals (Cinquemani *et al.*, in press).

Madison County supports three populations. Two of these, containing 12 and 15 plants respectively, are on unprotected privately owned lands. The third, which contained 40 plants in 1980, is within a State park. About half of the plants that were originally in the park were destroyed before 1980 by trail construction and subsequent erosion.

Canada. *Phyllitis scolopendrium* var. *americana* is listed as a rare species in the Atlas of the Rare Vascular Plants of Ontario. Although locally abundant in the center of its range in Grey County, it was included in the Atlas " * * * because most of its world population occurs in the Province. On a continental basis, this is a very small area and all of the peripheral populations in the United States are at risk" (Dickson and White 1983). Adjacent southern Bruce County also supports healthy populations of the taxon. Much smaller and more isolated populations occur in Peel, Halton, Dufferin, and Simcoe Counties (Soper 1954, Britton *in litt.*). A population located near Niagara Falls in Welland

County may have been extirpated by human activities or may have disappeared for other reasons (Hinds *in litt.*). Soper (1954) states that this population may have been transplanted to the site in the late 1800s. No plants have been observed there since 1925 (Dickson and White 1983).

Fernald (1970) includes New Brunswick in his description of the range of American hart's-tongue fern. However, Hinds (*in litt.*) states that the material collected in New Brunswick is the European variety and that the species is not believed to be native to the Province.

Phyllitis scolopendrium var. *americana* is threatened throughout most of its range by trampling, alteration, or destruction of its habitat by timber removal, quarrying, and residential or other development (Evans 1981, Nepstad 1981). Britton (*in litt.*) states that the most significant threats to the Canadian populations are " * * * lumbering or development of the escarpment lands e.g. quarries, ski slopes, country estates, etc." on which it occurs.

Federal government actions on this species began with section 12 of the endangered Species Act of 1973 (16 U.S.C. 1531 *et seq.*), which directed the Secretary of the Smithsonian Institution to prepare a report on those plants considered to be endangered, threatened, or extinct. This report, designated as House Document No. 94-51, was presented to Congress on January 9, 1975. On July 1, 1975, the Service published a notice (40 FR 27823) that formally accepted the Smithsonian report as a petition within the context of section 4(c)(2) (now section 4(b)(3)) of the Act. By accepting this report as a petition, the service also acknowledged its intention to review the status of those plant taxa named within the report. *Phyllitis scolopendrium* var. *americana* was included in the Smithsonian report and the July 1, 1975, Notice of Review. On June 16, 1976, the Service published a proposed rule (41 FR 24523) to determine approximately 1,700 vascular plant taxa to be endangered species pursuant to section 4 of the Act; *Phyllitis scolopendrium* var. *americana* was included in this proposal, which was later withdrawn.

The 1978 amendments to the Act required that all proposals over 2 years old be withdrawn. On December 10, 1979 (44 FR 70796), the Service published a notice withdrawing plants proposed on June 16, 1976. *Phyllitis scolopendrium* var. *americana* was included as a category-2 species in the revised Notice of Review for Native Plants published on December 15, 1980 (45 FR 82480).

Category-2 species are those for which the service has information that indicates that proposing to list them as endangered or threatened may be appropriate but for which substantial data on biological vulnerability and threats are not currently known or on file to support the preparation of rules. This species was also included in category 2 when the Notice of Review for Native Plants was again revised in 1983 (48 FR 53640) and in 1985 (50 FR 39528). The service funded surveys in 1980 to determine the status of *Phyllitis scolopendrium* var. *americana* in Alabama, Tennessee, and Michigan, and final reports for these surveys were accepted by the service in 1981. Additional information on the status of the species throughout its range and on threats to its continued existence have now been obtained by the Service.

All plants included in the comprehensive plant notices are treated as under petition. Section 4(b)(3)(B) of the Act, as amended in 1982, requires the Secretary to make certain findings on pending petitions within 12 months of their receipt. Section 2(b)(1) of the 1982 amendments further requires that all petitions pending on October 13, 1982, be treated as having been newly submitted on that date. This was the case for *Phyllitis scolopendrium* var. *americana* because of the acceptance of the 1975 Smithsonian report as a petition. In 1983, 1984, 1985, 1986, and 1987, the Service found that the petitioned listing of *Phyllitis scolopendrium* var. *americana* was warranted but precluded by other listing actions of a higher priority, and that additional data on vulnerability and threats were still being gathered. Publication of this proposal constitutes the final 1-year finding.

Summary of Factors Affecting the Species

Section 4(a)(1) of the Act and regulations (50 CFR Part 424) promulgated to implement the listing provisions of the Act set forth the procedures for adding species to the Federal lists. A species may be determined to be an endangered or threatened species due to one or more of the five factors described in section 4(a)(1). These factors and their application to *Phyllitis scolopendrium* (L.) Newman var. *americana* Fernald (American hart's-tongue fern) (Syn. *Phyllitis japonica* Kom. ssp. *americana* Löve and Löve) are as follows:

A. The present or threatened destruction, modification, or curtailment of its habitat or range. American hart's-tongue fern is threatened throughout

most of its range by trampling, habitat alteration, or destruction by timber removal, quarrying or residential development. The southern populations are especially vulnerable to extirpation by inadvertent trampling because of their small size and the steep precarious nature of their habitat. Short (1979) reports that between October 21, 1978, and November 24, 1978, one of the 20 plants that occurred at the Jackson County, Alabama, site was destroyed by someone who had apparently slid off the main trail and onto the plant. Evans (1981) reports that in July 1981 only nine plants remained at this location. Quarrying operations destroyed three of New York's populations and remain a threat to at least one of the remaining New York sites and two of the southern sites (Clemants *in litt.*, Evans 1981). Timber removal at most of the sites would be expected to raise light levels and lower humidity levels to the detriment of the species. Alterations associated with residential or other development would, in most cases, either directly destroy the plants present or result in environmental changes which make the sites unsuitable for American hart's-tongue fern. As previously stated, lumbering, quarrying, or other types of development are considered to be the most significant threats to the Ontario populations of the species.

B. Overutilization for commercial, recreational, scientific, or educational purposes. There is limited commercial trade in *Phyllitis scolopendrium* var. *americana*. The material currently in trade is believed to be of cultivated origin and not obtained from the wild populations. The original source of this material was one of the New York populations destroyed in the early 1900s by quarry operations (S. Clemants, New York Natural Heritage Program, personal communication, 1988). Most of the population in New York, Michigan, Alabama, and Tennessee are much too small to support any collecting for scientific purposes, for fern enthusiasts, or for other reasons. Inappropriate collecting remains a threat of these populations (Nepstad 1981). The larger Ontario populations have withstood, apparently without ill effects, low levels of collecting for some time (Pryer *in litt.*).

C. Disease or predation. Disease and predation are not known to be factors affecting the continued existence of the species at this time.

D. The inadequacy of existing regulatory mechanisms. *Phyllitis scolopendrium* var. *americana* is listed as endangered under Michigan's

Endangered Species Act and Tennessee's Rare Plant Protection and Conservation Act. In Michigan, taking is prohibited on all public and private lands; in Tennessee, taking is only restricted when the permission of the landowner or manager has not been obtained. In New York the species is protected under the Protected Native Plants Law, which states that removal of the fern without the landowner's permission is a violation of the law and subjects the violator to a \$25 fine. In Alabama the species does not receive any protection by the State.

Should the species be added to the Federal list of endangered and threatened species, additional protection from taking will be provided to the two populations on Federal lands. Protection from inappropriate commercial trade (utilizing plants of wild origin rather than cultivated material) would also be provided.

E. Other natural or manmade factors affecting its continued existence. Because of climatic changes, the southern populations of the species are restricted to extremely rare sites with physical environments that duplicate the conditions under which the northern populations grow. During the glacial period, the species may have been more widespread in southern limestone areas; but as the climate has warmed, it has become restricted to a few sites in or near caves (Evans 1982).

Crispin (personal communication, 1986) reports that in 1985 an infestation of leaf miners destroyed the leaves in the trees above one of the Michigan sites. The loss of shade that resulted from this alteration of the canopy desiccated many of the ferns growing on the forest floor. Insect infestations that temporarily remove the leaves of the canopy or result in long-term damage to the trees found there remain a threat to species.

The Service has carefully assessed the best scientific and commercial information available regarding the past, present, and future threats faced by this species in determining to propose this rule. Based on this evaluation, the preferred action is to list *Phyllitis scolopendrium* var. *americana* as a threatened species. Critical habitat is not being designated for the reasons discussed below.

Critical Habitat

Section 4(a)(3) of the Act, as amended, requires that, to the maximum extent prudent and determinable, the Secretary designate any habitat of a species, which is considered to be critical habitat, at the time the species is determined to be endangered or

threatened. Most populations of this species are small, and loss of even a few individuals to activities such as collection for scientific purposes could extirpate the species from some locations. Taking, without permits, is prohibited by the Act from locations under Federal jurisdiction; however, only two of the known populations are under Federal jurisdiction. Therefore, publication of critical habitat descriptions and maps would increase the vulnerability of the species without significantly increasing protection. The owners and managers of all the known populations of *Phyllitis scolopendrium* var. *americana* will be made aware of the plant's location and of the importance of protecting the plant and its habitat. No additional benefits would result from a determination of critical habitat. Therefore, the Service concludes that it is not prudent to designate critical habitat for *Phyllitis scolopendrium* var. *americana*.

Available Conservation Measures

Conservation measures provided to species listed as endangered or threatened under the Endangered Species Act include recognition, recovery actions, requirements for Federal protection, and prohibitions against certain practices. Recognition through listing encourages and results in conservation actions by Federal, State, and private agencies, groups, and individuals. The Endangered Species Act provides for possible land acquisition and cooperation with the States and requires that recovery actions be carried out for all listed species. Such actions are initiated by the Service following listing. The protection required of Federal agencies and the prohibitions against taking are discussed, in part, below.

Section 7(a) of the Act, as amended, requires Federal agencies to evaluate their actions with respect to any species that is proposed or listed as endangered or threatened and with respect to its critical habitat, if any is being designated. Regulations implementing this interagency cooperation provision of the Act are codified at 50 CFR Part 402. Section 7(a)(4) requires Federal agencies to confer informally with the Service on any action that is likely to jeopardize the continued existence of a proposed species or results in the destruction or adverse modification of proposed critical habitat. If a species is subsequently listed, section 7(a)(2) requires Federal agencies to ensure that activities they authorize, fund, or carry out are not likely to jeopardize the continued existence of such a species or

to destroy or adversely modify its critical habitat. If a Federal action may adversely affect a listed species or its critical habitat, the responsible Federal agency must enter into formal consultation with the Service. All but two of the known populations of *Phyllitis scolopendrium* var. *americana* are on privately owned or State-owned land. One Alabama population is on land managed as a National Wildlife Refuge by the U.S. Fish and Wildlife Service, and one of the Michigan populations is on lands managed by the U.S. Forest Service. There are no known current or planned Federal activities that may affect this species.

The Act and its implementing regulations found at 50 CFR 17.71 and 17.72 set forth a series of general trade prohibitions and exceptions that apply to all threatened plants. All trade prohibitions of section 9(a)(2) of the Act, implemented by 50 CFR 17.71, would apply. These prohibitions, in part, would make it illegal for any person subject to the jurisdiction of the United States to import or export, transport in interstate or foreign commerce in the course of a commercial activity, sell or offer for sale this species in interstate or foreign commerce, or to remove and reduce to possession the species from areas under Federal jurisdiction. Seeds from cultivated specimens of threatened plant species are exempt from these prohibitions provided that a statement of "cultivated origin" appears on their containers. Certain exceptions can apply to agents of the Service and State conservation agencies. The Act and 50 CFR 17.72 also provide for the issuance of permits to carry out otherwise prohibited activities involving threatened species under certain circumstances. It is anticipated that few trade permits would ever be sought or issued, since *Phyllitis scolopendrium* var. *americana* is not common in cultivation or in the wild. Requests for copies of the regulations on plants and inquiries regarding them may be addressed to the Office of Management Authority, U.S. Fish and Wildlife Service, P.O. Box 27329, Central Station, Washington, DC. 20038-7329 (202/343-4955).

Public Comments Solicited

The Service intends that any final action resulting from this proposal will be as accurate and as effective as possible. Therefore, any comments or suggestions from the public, other concerned governmental agencies, the scientific community, industry, or any other interested party concerning any aspect of this proposed rule are hereby

solicited. Comments particularly are sought concerning:

- (1) Biological, commercial trade, or other relevant data concerning any threat (or lack thereof) to *Phyllitis scolopendrium* var. *americana*;
- (2) The location of any additional populations of *Phyllitis scolopendrium* var. *americana* and the reasons why any habitat should or should not be determined to be critical habitat as provided by section 4 of the Act;
- (3) Additional information concerning the range and distribution of this species; and
- (4) Current or planned activities in the subject area and their possible impacts on *Phyllitis scolopendrium* var. *americana*.

Final promulgation of the regulation on *Phyllitis scolopendrium* var. *americana* will take into consideration the comments and any additional information received by the Service, and such communications may lead to adoption of a final regulation that differs from this proposal.

The Endangered Species Act provides for a public hearing on this proposal, if requested. Requests must be filed within 45 days of the date of this proposal. Such requests must be made in writing and addressed to the Field Supervisor, Asheville Field Office, U.S. Fish and Wildlife Service, 100 Otis Street, Room 224, Asheville, North Carolina 28801.

National Environmental Policy Act

The Fish and Wildlife Service has determined that an Environmental Assessment, as defined under the authority of the National Environmental Policy Act of 1969, need not be prepared in connection with regulations adopted pursuant to section 4(a) of the Endangered Species Act of 1973, as amended. A notice outlining the Service's reasons for this determination was published in the *Federal Register* on October 25, 1983 (48 FR 49244).

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Author

The primary author of this proposed rule is Mr. Robert R. Currie, Asheville Field Office, U.S. Fish and Wildlife Service, 100 Otis Street, Room 224, Asheville, North Carolina 28801 (704/259-0321 or FTS 872-0321).

List of Subjects in 50 CFR Part 17

Endangered and threatened wildlife, Fish, Marine mammals, Plants (agriculture).

Proposed Regulations for the protection of the American hart's-tongue fern. Accordingly, it is hereby proposed to amend Part 17, Subchapter B of Chapter I, Title 50 of the Code of Federal Regulations, as set forth below:

PART 17—[AMENDED]

1. The authority citation for Part 17 continues to read as follows:

Authority: Pub. L. 93-205, 87 Stat. 884; Pub. L. 94-359, 90 Stat. 911; Pub. L. 95-632, 92 Stat. 3751; Pub. L. 98-159, 83 Stat. 1225; Pub. L. 97-304, 96 Stat. 1411 (16 U.S.C. 1531 *et seq.*); Pub. L. 99-625, 100 Stat. 3500 (1986), unless otherwise noted.

is proposed to amend § 17.12(h) by adding the following, in alphabetical order under the family Aspleniaceae, to the list of Endangered and Threatened Plants:

§ 17.12 Endangered and threatened plants.

(h)

Species		Historic range	Status	When listed	Critical habitat	Special rules
Scientific name	Common name					
Aspleniaceae—Spleenwort family:						
<i>Phyllitis scolopendrium</i> var. <i>ameri-</i> <i>cana</i> .	American hart's-tongue fern	U.S.A. (AL, MI, NY, TN), Canada (Ont.)	T		NA	NA

Dated: August 11, 1988.

Susan Rocca,

Acting Assistant Secretary for Fish and Wildlife and Parks.

[FR Doc. 88-20617 Filed 9-9-88; 8:45 am]

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